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APPLICATION NO. FILING DATE FIRST NAMED INVENTOR ATTORNEY DOCKET Α JOUANNEAU 09/22/98 09/155,241 **EXAMINER** PM92/0419 BEHREND, H ANDRE JOUANNEAU 6028 SOUTHPORT DRIVE ART UNIT PAPER NUMBER BETHESDA MD 20814 3641 04/19/01 DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

09/155741 Jouanneau
Behrend Group Art Unit 3641
the cover sheet beneath the correspondence address-
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PIREMONTH(S) FROM THE MAILING DATE
hin the statutory minimum of thirty (30) days will be considered timely. SIX (6) MONTHS from the mailing date of this communication. use the application to become ABANDONED (35 U.S.C. § 133).
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is/are pending in the application.
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onal Bureau (PCT Rule 1 7.2(a)).
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☐ Interview Summary, PTO-413
☐ Interview Summary, PTO-413☐ Notice of Informal Patent Application, PTO-15

1. Applicants election with traverse in the 2/28/01 response, of Group I and species 1a, A, TaFe as the ultimate specie of metal for the "solid" and, H⁺ as the ultimate specie of particle that enters the lattice and forms the plasma, is acknowledged.

Applicants arguments have been considered, however, it is maintained that there is lack of unity for the reasons set forth in section 6 on page 4 of the 8/28/00 Office action. It is noted that applicant has not pointed to any differences in "experimental conditions" between his invention and Williams et al.

As pointed out in section 2 on page 2 of the 8/28/00 Office action, only claims 1-12 are readable on specie 1a (the elected specie).

An action on claims 1-12 accordingly follows.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Application/Control Number: 09/155,241

Art Unit: 3641

3. The specification is objected to under 35 U.S.C. §112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure.

There is no reputable evidence of record to support any allegations or claims that the invention involves nuclear reactions, nuclear fusion nor, that any allegations or claims of "excess heat" due to nuclear and/or chemical reactions are valid and reproducible, nor that the invention as disclosed is capable of operating as indicated and capable of providing a useful output.

Applicants inventions is directed to the creation and utilization of a stable plasma in a solid including causing the plasma particles to undergo nuclear fusion.

However, there is no adequate description nor enabling disclosure of how and in what manner, one can actually operatively create and use a stable plasma in a solid including causing the plasma particles to undergo nuclear fusion.

This concept of causing particles (e.g. hydrogen isotopes as in the instant case) to enter a solid and undergo nuclear fusion, has become known in the art as "cold fusion".

However, as set forth more fully below, this "cold fusion" concept is still no more than just an unproven concept.

It is noted that this particular "cold fusion" concept was publicly announced by Fleischmann and Pons (hereinafter, F and P), in 1989 (see the 3/24/89 article by D. Braaten).

Subsequent to the announcement of the cold fusion concept by F and P, many laboratories have attempted to confirm the results of F and P.

The results of these attempts at confirmation were primarily negative and even of the few initial positive results, these were generally either retracted or shown to be in error by subsequent experimenters (see for example, the article by Stipp in the Wall Street Journal and the article by Browne in The New York Times (particularly page A22)).

The general consensus by those skilled in the art and working at these various laboratories is that the assertions by F and P were based on experimental errors (e.g. see the New York Times article by Browne, Kreysa et al, Lewis et al, Hilts, Horanyi, Ohashi et al, MisKelly et al, and Chapline).

It was also the general consensus by those skilled in the art and working at these various laboratories that there is no reputable evidence of neutron, gamma ray, tritium or helium production to support the allegation or claim that nuclear fusion is taking place, nor is there any reputable evidence to support the allegation or claim of excess heat production. See for example (in addition to the above listed references), page A14 of the 7/13/89 edition of The Washington Post, Cooke, Alber et al, Faller et al, Cribier et al, Hajdas et al, Shani et al, Ziegler, Price et al, Schrieder et al and page A3 of the 3/29/90 edition of the Washington Post.

Of particular interest is page A3 of the 3/29/90 edition of The Washington Post (which refers to the negative findings of a physicist who had tested Pon's own cold fusion apparatus, for

nuclear output (for a more complete analysis of said "negative findings", note the article by Salamon et al)). Also of interest in this respect is the Cooke reference which on page 4 and 5, refers to the attempts at Harwell to obtain "cold fusion" and that Fleischmann (of F and P) had requested help from Harwell in verifying the cold fusion claims.

The last paragraph on said page 5 states:

"After three months of around-the-clock work at a cost of over half a million dollars, the project was terminated on June 15. This program is believed to be one of the most comprehensive worldwide with as many as 30 cells operating at a time and over 100 different experiments performed. The final result of this monumental effort in the words of the official press release was, "In none of these experiments was there any evidence of fusion taking place under electrochemical conditions". It should also be added that there was no evidence of excess heat generated by any of their cells". (underlining added).

Applicants specification contains assumptions and speculation as to how and in what manner, his invention will be operative (e.g. see pages 2+, 4+). The specification basically sets forth applicants concept or theory as to what is alleged to take place in a system utilizing an anode and a hydrogen isotope absorbing and/or adsorbing cathode, in an electrolyte. However, applicant has presented no reputable factual evidence to support his assumptions and speculation concerning the formation of a "plasma" in a solid, and, that the "plasma" can be manipulated as set forth in the specification and, that it can be utilized in any of the manners set forth in the

specification (including causing the plasma to undergo a nuclear fusion or excess enthalpy reaction).

Applicant has presented no reputable factual evidence to support his theory on what is caused to take place in the cathode. Applicant has presented no reputable factual evidence to support his assumptions and speculation (concepts and theories) as to what happens to the hydrogen when and after it has been caused to enter the cathode and, to the amounts of hydrogen which can be caused to build up in the cathode. Applicant has presented no reputable factual evidence to support his assumption and speculation that the hydrogen isotopes will exist in the cathode and be stored therein as protons, deuterons and tritons rather than as atoms or molecules or in the form of a hydride, e.g. palladium hydride. Furthermore, it is pointed out that concepts and theories per se, are not patentable.

The disclosure is insufficient in failing to set forth the underlaying assumptions for applicants theory and assumptions as well as applicants appraisal of the degree of validity of said assumptions.

The disclosure is thus insufficient and non-enabling as to exactly what all is necessary to actually present a reproducible, sustainable nuclear fusion or excess enthalpy reaction, and, as to what would cause such reactions to actually take place in applicants system as illustrated in any of applicants figures.

There is no evidence to support the assumption and speculation that nuclear fusion and/or energy producing reactions will take place in applicants invention, and, there is no evidence to support the assumption and speculation that such nuclear fusion and/or energy producing reactions will take place to the extent that useful and recoverable amounts of heat, energy, neutrons, protons, radioisotopes etc., will be produced so as to be able to operatively perform any of the uses or utilities set forth <u>for example</u> in the specification on pages 3+, 36+).

The disclosure is insufficient in failing to set forth what the "required pulses" would be when using a pulsed system (including what would represent a suitable pulse width and pulse rate). The specification on page 16 lines 3+ states that by adding periodical impulses to a constant current-density, it is possible to "force the periodic entry of similar protonic waves". However, the disclosure is insufficient as to examples of a suitable constant current-density and of the added periodical impulses which would operatively enable the "periodic entry of similar protonic waves" and, as to how and in what manner it is determined that said forced entry of the protonic waves has actually occurred.

The disclosure is insufficient as to the basis for the statement in the specification that "plasma" will be formed in the metal matrix and that this "plasma" will have a very high density (i.e. on the order of 10²³-10²⁴ particles/cc)(e.g. see the top of page 2 of the specification).

The specification on pages 9+ for example, states that in an electrochemical cell utilizing a hydrogen isotope containing electrolyte solution and a Pd cathode, because of the particular

characteristics of palladium metal, the hydrogen isotopes will be caused to enter the Pd cathode and form a "plasma" therein.

However, applicant in the instant case as well as in his copending applications (e.g. see 08/467,298, 08/599,031) has taken the position that documents such as Williams et al and Pons et al which <u>likewise</u> illustrate electrochemical cells having a Pd cathode in a hydrogen isotope containing electrolyte, do not form a "plasma" in the Pd cathode.

Accordingly, applicants disclosure is insufficient as to the additional apparently critical features/parameters, etc., which his invention has and which is allegedly lacking in such documents as Pons et al and Williams et al, such that applicant can produce "plasma" in a Pd cathode whereas Pons et al and Williams et al allegedly could not produce "plasma".

The disclosure is insufficient and non-enabling as to how and in what manner, it is ensured that the concentration in the metal, of the desired particles (hydrogen isotopes) is on the order of 10^{23} - 10^{24} particles/cc.

The disclosure is also insufficient and non-enabling in failing to set forth a full set of parameters of an operative system which will provide said concentration of desired particles per unit volume.

The disclosure is insufficient and non-enabling as to how and in what manner, it can be determined that the concentration in the metal of desired particles (hydrogen isotopes) is on the order of 10²³-10²⁴ particles/cc.

The disclosure is insufficient as to how and in what manner, this very high density or concentrated "plasma" can be considered "stable" and, be <u>maintained</u> as such for several hours as stated on page 2 lines 9+ of the specification.

The disclosure is insufficient as to how and in what manner, the energy produced in forming molecular hydrogen will

- (1) place the metallic atoms of the layer in a state of vibration,
- (2) disperse the H D T⁺ inside the layer and help them find the reactional sites available for reaction,
 - (3) disperse atomic hydrogen in the layer and inside the metal,
- (4) push the molecular hydrogen outside the electrode after the reaction (see the paragraph bridging pages 5 and 6 of the specification).

The specification on page 6 is insufficient as to exactly what the volumic mass P actually is and as to how it is determined.

Furthermore, if V_{free} is proportioned to V_a and only equals 25%- 29% of V_a , the disclosure is insufficient as to how it can be considered that V_a and V_{free} are equivalent (as stated in the specification on page 6 lines 26+).

The disclosure is insufficient as to the basis for the statement that since their speeds are different, the protons and elections remain inside the electrode without reacting, in plasma form

(and as to how and in what manner it is determined that such is the case)(see the specification on

page 10 lines 19+).

The disclosure is insufficient as the basis and as to how and in what manner it is

determined, that the "vibrations" prevent the formation of molecular hydrogen and that the

particles will thus remain in the metal lattice in plasma form (see page 11 lines 32+ of the

specification).

The disclosure is insufficient as to how and in what manner it is determined and, as to the

basis for the statement, that the "plasma cells" in the electrode core are "passive" and cannot

store plasma (see page 15 lines 7+ of the specification).

The disclosure is insufficient as to how and in what manner it is determined and, as to the

basis for the statement, that operating at the electrode resonance, will cause more of the plasma

cells to store the hydrogen isotopes in plasma form (see page 16 lines 32+ of the specification).

The disclosure is insufficient as to what are the two spheres referred to in the

specification on page 17 lines 26+.

The disclosure (e.g. see page 17 lines 25+) is insufficient as to what the "spherical crown

or ring" actually consists of, as to how and in what manner this spherical crown or ring is caused

to be formed, and, as to how and in what manner it is determined that such is actually present.

The disclosure is insufficient as to how and in what manner it is ensured, and, it is determined, that a "Pinch effect" takes place (see the sentence bridging pages 17 and 18 of the specification).

The disclosure is insufficient as to how and in what manner it is determined that the elementary cells behave as small tokamaks or "nanotokamaks" (page 18, lines 23+ of the specification).

The disclosure is insufficient as to how and in what manner it is determined that the electric field is nil inside and outside the plasma crown and that the magnetic field is nil outside the plasma crown (page 18 lines 30+ of the specification).

Page 19 lines 24+ of the specification indicates that for applicants invention to be operative, the electrolyte solution and anode must be "very pure".

First, the disclosure is insufficient as to what "very pure" actually means. Second, it is well known that elements (including impurities can leach out of any component including the container walls, etc.) in contact with the electrolyte and plate out on the cathode. It would appear that such would also prevent applicants invention from being operative and the disclosure is hence insufficient as to how and in what manner, such is accounted for.

The disclosure is insufficient as to how and in what manner it is determined, and, ensured, that "stationary waves" are created and maintained inside the cathode (page 20 lines 16+ of the specification).

There is no adequate description nor enabling disclosure of how and in what manner, the embodiments illustrated for example in Figs. 8-12b and 14, could actually be made operative and as to what the requisite system parameters would be.

There is no adequate nor enabling disclosure of the parameters of a specific operative embodiment of the invention including applied voltage; current density; pulse rate if current is pulsed; the composition (including impurities and amounts thereof) and pH of the electrolyte; the necessary concentrations of hydrogen isotopes per unit volume that is necessary for the creation of the "plasma" and for the desired nuclear fusion reactions to actually take place; etc.

Note that these parameters are particularly critical because applicant has taken the position that otherwise presumably <u>identical</u> systems such as in Williams et al, do <u>not</u> produce "plasma" in the Pd cathode (e.g. see page 3 of the 2/28/01 response).

It is apparent from the specification that applicants concept or theory involving a nuclear fusion system which is actually based on the "cold fusion" systems that came about from the work of F and P, is workable or operative, <u>only if</u> these systems are already operative.

However, as set forth above, the examiner has presented evidence showing that in such nuclear fusion systems, the claims of nuclear fusion and/or excess heat are not reproducible or even obtainable. It consequently must follow that the claims of nuclear fusion and/or excess heat are not reproducible or even obtainable with applicants invention. While applicant may have set forth theoretical concepts, it is well known in the nuclear fusion field that theory and reality have

a habit of not coinciding. There is no evidence to indicate applicants has so succeeded where others have failed, in arriving at an operative nuclear fusion system, i.e. that he has progressed his system beyond the point of an unproven theory or concept which still requires an undue amount of experimentation to enable the artisan to make and use the inventive system for its indicated purpose. This view is also considered supported by the failure to set forth a full example of the specific parameters of an operative embodiment. One cannot rely on the skill in the art for the selection of the proper quantitive values to prevent an operative cold fusion system, since those in the art do not know what these values would be. See Bank v. Rauland Corp. 64 U.S.P.Q. 93; In re Corneil et al, 145 U.S.P.Q. 697.

To reiterate briefly, the examiner has presented evidence, that neither the situation of nuclear fusion nor of "excess" heat, can reasonably be expected to be reproducible or even obtainable with the present invention.

There is no reputable evidence of record that would overcome the experimental showings in the above listed references, disproving this concept of "cold fusion".

Again, there is no evidence to indicate applicants have so succeeded where others have failed, in arriving at an operative system that produces nuclear fusion or even "excess heat", i.e., that they have progressed their system beyond the point of an unproven theory or concept which still requires an undue amount of experimentation to enable the artisan to make and use the invention for its indicated purposes.

Application/Control Number: 09/155,241 Page 14

Art Unit: 3641

It is thus considered that the examiner (for the reasons set forth above) has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the application itself to inform, not to direct others to find out for themselves; In re

Gardner et al, 166 USPQ 138, In re Scarbrough, 182 USPQ 298. Note that the disclosure must enable a person skilled in the art, to practice the invention without having to design structure not shown to be readily available in the art; In re Hirsch 131 USPQ 198.

- 4. Claims 1-12 are rejected under 35 U.S.C. §112, first paragraph, for the reason set forth in the objection to the specification, in section 3 above.
- 5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-12 are rejected under 35 U.S.C. 101 because the invention as disclosed is inoperative and therefore lacks utility.

The reasons that the invention as disclosed is inoperative are the same as the reasons set forth in section 3 above as to why the specification is objected to and the reasons set forth in said section 3 above are accordingly incorporated herein.

There is no reputable evidence of record to indicate the invention has been reduced to the point of providing in current available form, an operative cold fusion system. The invention is not considered as meeting the requirements of 35 U.S.C. 101 as being "useful". Note in this

respect, page A14 of the 7/13/89 edition of The Washington Post which indicates that there is no convincing evidence that the "phenomena attributed to cold fusion would produce useful sources of energy".

Applicant at best, has set forth what may be considered a concept or an object of scientific research. However, it has been held such that does not present a utility within the meaning of 35 U.S.C. 101. See Brenner v. Manson, 148 U.S.P.Q. 689.

Additionally, it is well established that where as here, the utility of the claimed invention is based upon allegations that border on the incredible or allegations that would not be readily accepted by a substantial portion of the scientific community, sufficient substantiating evidence of operability must be submitted by the applicant. Note In re Houghton, 167 USPQ 687 (CCPA 1970); In re Ferens, 163 USPQ 609 (CCPA 1969); Puharich v. Brenner, 162 USPQ 136 (CADC 1969); In re Pottier, 152 USPQ 407 (CCPA 1967); In re Ruskin, 148 USPQ 221 (CCPA 1966); In re Citron 139 USPQ 516 (CCPA 1963); and In re Novak, 134 USPQ (CCPA 1962).

7. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are vague, indefinite and incomplete.

The specification on pages 9+ states that in an electrochemical cell utilizing a Pd cathode, the hydrogen isotopes will be caused to enter the Pd and form a "plasma" therein.

Application/Control Number: 09/155,241 Page 16

Art Unit: 3641

However, applicant in the present case (e.g. see page 3 of the 2/28/01 response) as well as in his copending applications (e.g. see 08/467,298, 08/599,031) has taken the position that documents such as Williams et al and Pons et al which illustrate what appears to be identical electrochemical cells having a Pd cathode in a hydrogen isotope containing electrolyte, do not form a "plasma" in the Pd cathode.

Accordingly, applicants claims are <u>incomplete</u> in failing to recite the apparently critical additional features/parameters, etc., not found in Williams et al or Pons et al, which actually enables applicants claimed invention to produce "plasma" in the electrode.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-4, 7-12 are rejected under 35 U.S.C. 102(b) as being anticipated by any of Williams et al, Pons et al, Ormorit, Kubota or Makoto.

The references each illustrate the same structure and method of operation as is recited in applicants claims.

It is noted that applicants specification indicates palladium has the proper volume between the Pd atoms in the metal lattice to allow the formation of a hydrogen isotope plasma (e.g. see pages 6+). Applicants specification indicates this hydrogen isotope plasma will inherently be formed in the palladium metal matrix (e.g. see page 10 lines 28+, pages 11, 12, 15, 21). Applicants specification indicates that the energy released in the Pd lattice when a hydrogen molecule is formed therein, will inherently cause the Pd lattice to vibrate (e.g. see pages 5, 8, 11, 12, 14, 15). Said page 11 lines 34+ of applicants specification states that the free space between the Pd atoms in the Pd metal lattice acts as a resonate cavity. Accordingly, for these additional reasons, it is considered that the Pd lattice in any of the references will absorb hydrogen isotopes and inherently be caused to vibrate at one of the resonant frequencies of the Pd lattice.

Since the structure and method of operation of each reference is the same as that recited in the claims, each reference must inherently function in the same manner, to produce the same result as that of applicant.

As to limitations which are considered to be inherent in a reference, note the case law of <u>In re Ludtke</u>, 169 USPQ 563, <u>In re Swinehart</u>, 169 USPQ 226, <u>In re Fitzgerald</u>, 205 USPQ 594, <u>In re Best et al</u>, 195 USPQ 430, and <u>In re Brown</u>, 173 USPQ 685, 688.

10. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by any of Bellanger et al, Schulten et al, Buechler, Lovelock (I) or Pavelle et al.

The references each illustrate electrolytic systems having a Pd cathode in which hydrogen isotopes are absorbed. Note that Bellanger et al illustrate the use of current densities of from 0.05 to 0.67 A cm² and, that Schulten et al illustrate current densities of around 0.2 A cm². Note that Pavelle et al refer to the absorption of a hydrogen isotope plasma in the Pd lattice (col. 3 lines 3-5) and, the production of resonances in the Pd lattice (e.g. see col. 5 lines 64+ and col. 4). In view of these teachings in the references and in view of applicants statements or admission in the specification (already discussed above), it is considered that the Pd lattice of any of the references will absorb hydrogen isotopes and inherently be caused to vibrate at one of the resonant frequencies of the Pd lattice.

As to claims 5 and 6, note that the references each show the Pd cathode as being the material or structure which separates two distinct media.

Since the structure and method of operation of each reference is the same as that recited in the claims, each reference must inherently function in the same manner, to produce the same result as that of applicant.

As to limitations which are considered to be inherent in a reference, note the case law of <u>In re Ludtke</u>, 169 USPQ 563, <u>In re Swinehart</u>, 169 USPQ 226, <u>In re Fitzgerald</u>, 205 USPQ 594, <u>In re Best et al</u>, 195 USPQ 430, and <u>In re Brown</u>, 173 USPQ 685, 688.

11. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer <u>cannot</u> overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 1-12 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-4 of copending Application No. 09/222, 311. This is a <u>provisional</u> double patenting rejection since the conflicting claims have not in fact been patented.

- 12. The other references cited further illustrate pertinent art.
- 13. Any inquiry concerning this communication should be directed to Mr. Behrend at telephone number (703) 305-1831.

Behrend/cw April 13, 2001

> HARVEY E. BEHREND PRIMARY EXAMINER